Comment on: ”Low DE, Kuppusamy MK, Alderson D, et al. Benchmarking Complications Associated with Esophagectomy

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DOI: https://doi.org/10.1097/sla.0000000000003382

(5.5%) was statistically lower compared with the appendectomy group (12.8%) (OR 0.42; $P = 0.02$).

However, when managing patients with acute appendicitis nonoperatively, we should keep in mind that the diagnosis of appendicitis remains only a diagnosis of probability. Indeed, although nowadays patients are increasingly submitted to imaging examinations, we must recognize that CT scan might face with false-negative results (complicated appendicitis finding after appendectomy varies from 2.7% to 35% in patients treated with antibiotics), and negative appendectomy rates are still estimated to approach 8%.[4–6]

Similarly, conducting an analysis of the incidence of surgical complications by comparing all patients who underwent surgical therapy with appendectomy to the entire population in the antibiotic-first group, we found that this rate was 2.7% in the antibiotic group and 13.6% in the appendectomy group (OR 0.22; $P < 0.0001$).

The number and rates of postoperative abscesses, surgical site infections, incisional hernias, obstructive symptoms, and other general complications (including adverse reaction to antibiotics, anesthesiology complications, cardiovascular, and pulmonary adverse events) were analyzed on an intention-to-treat basis in our meta-analysis, showing that the rate of complications of antibiotic-first therapy was significantly lower compared with appendectomy (7.1% vs 14.5%; OR 0.41; $P = 0.006$).

Whether the benefits of potentially avoiding surgery with NOM are outweighed by the burden to the patient related to future episodes of appendicitis, the risk of persisting abdominal discomfort, and the uncertainty that may affect quality of life, remains an unclear issue.[7]

This is especially true given that laparoscopic appendectomy has a very favorable safety profile, with a complication rate lower than 10% in recent statistics, and typically involves short hospitalization.

Probably, our meta-analysis, although well designed and conducted with rigorous statistical methods, represents a further step nearer rather than a step toward the achievement of certainties on this debated issue. What we can now say with certainty is that for every 100 patients with uncomplicated appendicitis, initial antibiotic therapy compared with prompt appendectomy may result in 91 fewer patients receiving surgery during the first admission, and 20 more experiencing recurrent appendicitis within the first year.

MP, CG, and SDS contributed equally to this letter.

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

No ethical approval was required for this article.

The authors report no conflicts of interest.

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Comment on "Low DE, Kuppusamy MK, Alderson D, et al. Benchmarking Complications Associated With Esophagectomy. Ann Surg 2019;269: 291–298"

To the Editor:

With great interest, we read Dr. Low's multicenter paper[1] aiming at defining benchmarks on complications associated with esophagectomy. We highly valuate this manuscript that holds a large amount of important information derived from a high-quality prospective international database.

However, while benchmarking of complex procedures is a novel tool to assess outcome and to offer benchmark values for comparisons with other cohorts of patients or even single cases, the current work does not fulfill the criteria of a true benchmark analysis. The fundamental idea of benchmarking is to provide a pragmatic and individually accessible measure for quality that allows for comparison with a *best possible* outcome—the benchmark.[2,3] Establishing a valid benchmark involves several technical steps,[3] and it is essential that benchmarks are generated from *low-risk* patient cohorts using a standardized methodology.[4,5] In addition, it is critical to present benchmark cut-off values for each outcome indicator (usually the 75th percentile of each center's median to adjust for outcome variability among centers).

In the present study, the authors did not differentiate surgical approach or technique, nor did they provide different cut-off values for a specific patient's risk level. Outcomes of patients with various comorbidity and different Americas Society of Anesthesiologists scores that underwent all types of (open or minimally invasive) esophagectomy or with tumors located in the proximal as well as distal esophagus, etc., are mixed together. Further, points of reference are presented as a percentage of all patients included in the database, an approach that does not compensate for center-specific differences. For creating a valid benchmark that truly serves as point of reference of best possible outcome, the surgical approach (minimally invasive, hybrid, open, etc.) and the selection of patients with low comorbidity, presumed to have the least amount of postoperative complications, is of utter importance.[5,6] Furthermore, results should be assessed for each center individually and each hospital's median result (or percentage of binominal outcomes) should be used for benchmark value calculation. Therefore, the present paper represents an excellent summary of meticulously collected data but fails to provide reference values to assess performance gaps for other groups of patients or variations in surgical technique.

The authors report no conflicts of interest.

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Comment on "Training the Surgeon-Scientist in Today's Healthcare Environment"

To the Editor:

We read with great interest the recent article by Goldstein et al[1] on *A Roadmap for Aspiring Surgeon Scientists in Today's Healthcare Environment*. In a collaborative effort with the Basic Science Committee of the Society of University Surgeons, these authors lay a pathway for the surgeon striving to develop a successful career as a surgeon-scientist. This article builds on their previous work, which identified barriers to becoming a surgeon-scientist in the 21st century. The authors are to be commended for their contributions on such an important issue.[2]

The surgeon-scientist has been described as the ideal translational scientist, capable of bridging the worlds of basic science and clinical medicine to accelerate surgical innovation and discovery.[3] As the authors point out, surgical history is rich with stories of tremendous scientific advances that transformed medicine and surgery. Despite these achievements and the role surgeons-scientists have played in shaping modern healthcare, the number of surgeons pursuing basic science has been on the decline. Demanding clinical schedules in a labor-intensive field, administrative duties, and the adoption of productivity-based compensation models has made it difficult for surgeons to balance productive clinical and basic science careers.[2] Moreover, personal challenges including a lack of intrinsic interest in basic science research, a desire for work–life balance, and the desire to pay off their mounting student loan debt have discouraged many trainees from pursuing a career as a surgeon-scientist.[2,4] Collectively, this has led to a dearth of surgeons conducting bench work, which is concerning given that many diseases are treated primarily by surgeons. Certainly, this highlights the importance of training surgeons in scientific methodology so that they can answer important clinical questions that no one outside of surgery can solve. This point was recently emphasized in the journal *Nature*, in which calls for surgeons to reinvigorate the pursuit of basic science were made by nonsurgeons.[5]

We could not agree more with Goldstein et al that scientific training is paramount to the success of any surgeon-scientist and their baseball analogy could not be more valid. In order to take advantage of the roadmap provided by the authors, learning to conduct surgical science is of the utmost importance. It is our belief that the research fellowship is an invaluable tool for learning this, and that the experience gained during these formative years is instrumental in determining the future success of the surgeon-scientist. At our institution, surgeon-scientists are trained under a National Institutes of Health T32 training grant as part of a mentored research fellowship. Throughout the program, trainees receive guidance from leading basic science and surgeon-investigators. The pursuit of an advanced degree (eg, Masters, PhD) in clinical and translational science is required and includes formal instruction in grant writing, protocol development, biostatistics, bioethics, and research electives designed to enhance the trainees' individualized goals. The training experience is further augmented by simultaneously requiring trainees to spend 2 years in National Institutes of Health-funded laboratories engaged in cutting-edge basic science research. We believe that this triple-pronged approach puts the surgeon-scientist trainee in the best position to bridge the gap between basic science and the clinical world, allowing them to go from bedside to bench and back again in the name of surgical innovation. The success of our trainees is evidenced by the receipt of numerous research awards, extramural grant funding, attainment of competitive clinical fellowships, and publishing in high impact surgical and scientific journals including *Nature.* Equally important, our trainees recognize that having a successful career as a surgeon-scientist is both feasible and rewarding.

The current lack of surgeon-scientists pursuing basic science should be of great concern to our field. The authors acknowledge the many challenges and competing interests facing surgical investigators. Yet, for the sake of surgical innovation and patient care, we must continue to aggressively pursue basic investigation now more than ever. Surgeon-scientist trainees should be taught the value of conducting surgical research, and that the tools gained will only add to their armamentarium, allowing them to become better surgeons and provide better care.[6,7] The roadmap provided by Goldstein et al provides a framework for aspiring surgeon-scientists to follow. However, to successfully navigate that roadmap, a surgeon must also master the art of conducting surgical science. We maintain that this endeavor is best accomplished through mentored research fellowships. As our healthcare environment continues to evolve, so too should our approach for recruiting and training the next generation of surgeon-scientists. Surgeons who are well versed in basic as well as clinical and translational science will be poised to lead the next generation of surgical innovation and discovery. Goldstein et al should be commended for their important contributions that promulgate avenues for becoming a successful surgeon-scientist in today's healthcare environment.

The authors acknowledge the Markey Cancer Center Research Communications Office for providing editorial assistance.

B.M.E. is the recipient of an NIH/NCI training grant (T32CA160003) that supports Drs. R.C.D. and R.-M.F.B.

